1861MNRAS..22....8B

a Dawes's solar eye-piece, by Dollond, with a magnifying power of 200 diameters, and with an ordinary astronomical eye-piece, of about 300 diameters, appertaining to one of the Society's Sheepshanks Equatoreals, by Simms.

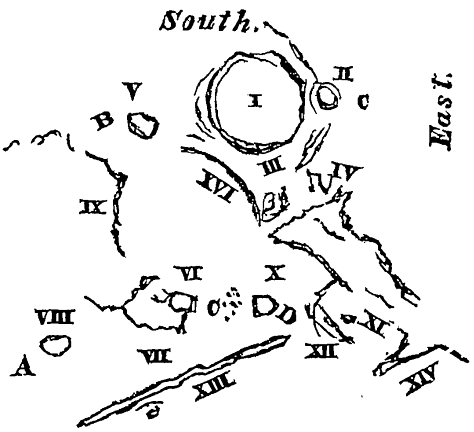
"This assumed shallowness of the *photosphere*, indeed, seems *proved* by Mr. Nasmyth's most interesting discovery of the thin layer of luminous lenticular bodies, of which that observer asserts the solar surface to consist.

"On the other hand, the *nuclear stratum*, or perhaps *strata*, appears to be of prodigious thickness, as may be inferred from the evidently vast depths into which the nuclear orifices descend, and as the varying intensity of blackness in different parts of the same nucleus seems also to bespeak. See series of large spot ζ throughout sheet 41, and series also of the grand spot ν in sheets 47 and 48, where the idea seems forced upon one, of chasms descending through cloudy strata, dozens or perhaps rather scores of thousands of miles in perpendicular depth."

Description of a portion of the Lunar Surface seen at Dr. Lee's Observatory at Hartwell, on the morning of July 31, 1861. By W. R. Birt, Esq.

The Roman numerals refer to the accompanying sketch which is taken from Beer and Mädler's map of the Lunar Surface.

I. *Cichus.*—A deep crater on the south-west extremity of a very rugged portion of high land, forming part of the south-east boundary of the *Mare Nubium.*



Mr. Webb thus speaks of *Cichus* :—

"*Cichus*, 189, on index map, a crater opened in table land, lies 9000 feet beneath the plateau, 4000 feet below the plain; its ring is perforated by a smaller crater, an object of

1861MNRAS..22....8B

great interest. In 1833 I perceived that it was twice as large as it had been represented three several times by Schröter. On becoming possessed of the great map, I found it there also enlarged. Schröter, though a clumsy, was a faithful draughtsman; his views have the appearance of being each independently drawn, and they are under different angles of illumination, which often vary the size of small craters, so that here is *fair evidence of volcanic action* since 1792; the silence of Beer and Mädler being characteristic, goes for little or nothing."

Webb gives two figures; one, copied from Schröter's design, 1792, Jan. 4; the other, taken from Beer and Mädler's map. I am not in possession of Schröter's.

II. *Cichus* A, marked C in Beer and Mädler's map, a small but deep crater on the south-east margin of the ridge of *Cichus*. This small crater should be most carefully watched and measured; only a portion of the margin was seen this morning, as a projecting tongue of light into the dark shadow within the larger crater.

III. A crater north of *Cichus*, given in the small German map, but singularly omitted in the large map. There is a very obscure marking in the neighbourhood of the fault next to be described, *where I saw the crater exceedingly well defined;* but it has on the map not the remotest resemblance to a crater: it is situated between two mountain masses marked β and γ. This is also an object that requires close attention.

IV. A fault north-east of III., forming the south-west portion of a somewhat narrow triangular mass of very high land, about 5000 feet; see quotation from Webb. It is also very rugged. This mass of high and rugged land is well shown on the large German map.

V. A small crater west of *Cichus*, marked B on the large German map.

VI. A crater near the boundary of the *Mare Nubium*, forming with III. and V. an isosceles triangle, III. and V. being the base. The position of this crater, as I saw it, does not accord with its position on the large map. I apprehend it to be really more southerly than marked by Beer and Mädler. Westward of this are *four* small craters, which I failed to see. *Query*, were they too much advanced on the terminator?

VII. A portion of high land, on the south-east extremity of which *e* (VI.) is situated. The small German map gives a ridge hereabout; it does not, however, terminate as I saw it. It is very much better delineated on the large map.

VIII. A crater marked A on the large map, on the east edge of *Hesiod*, which is now on the terminator. Its outline is perceptible, but the floor is in perfect darkness.

IX. The east edge of a crater now in shadow, which does not appear to be given in the German map. The east ridge is, however, well given in the large map; it is connected with the

1861MNRAS..22....8B

boundary of a large space south of *Hesiod*, presenting (on the map) the appearance of a large disrupted crater (unnamed).

X. A small crater marked D on the large map: it is north-east of *e* (VI.)

XI. A small crater nearly, but not quite, in a line with VI. and X., also given in the German maps, but delineated in the larger map as being much more diminutive in comparison with the craters in its neighbourhood than I saw it. It is *undesignated*, probably as having been an inconspicuous object at the date of Beer and Mädler's labours.

XII. A small serpentine mountain chain between X. and XI. given in the German maps.

XIII. A rille or canal brought out most exquisitely by the Hartwell telescope, but no traces of its consisting of minute craters, although examined with a power of 416. The utmost I could detect was a very narrow gutter-like formed canal running north-west and south-east, or thereabout, from *Hesiod* to near the steep and rugged south-east boundary of the *Mare Nubium*, the north-east interior slope being in shadow, the south-west in sunshine. I estimated it to be somewhat about a mile wide. It is well delineated on the German map, and is marked δ.

XIV. A short mountain-range running nearly at right angles from one extremity of the triangular mass of high land, described at IV., and at right angles generally to the steep and rugged boundary of the *Mare Nubium*, to the two craters *Mercator* and *Campanus*. It is given very distinctly on the larger map.

XV. A small conical mountain (?) very apparent north-east of, and closely abutting on, the rille or canal XIII. (δ). This is not given on the German map, and no traces whatever can be seen on the larger map. It would be well to watch very closely the neighbourhood of this mountain, especially as the surface of the *Mare* is exceedingly smooth, north-east of the canal.

XVI. Western edge of the high land forming the south-west part of the mass on which *Cichus* is situated; shown on the large map.

From VI. in the direction of X. towards XII., and as far as XIV., the surface is studded with small mountains (hillocks in comparison with the larger mountain masses), clearly separating the smoother spaces within IX. and XVI. from the general surface of the *Mare*. This appearance of being thus studded is shown on the larger map. The space between IX. and XVI. being separated from the general surface has greatly the appearance of having been a portion of a large ancient crater, probably broken up by the formation of this portion of the boundary of the *Mare Nubium*.

The above described observations were made with Dr. Lee's great Equatoreal, object-glass by Tully, on July 30, 1861, between 13 and 15 hours G.M.T. Power employed 240.

1861MNRAS..22R..11B

The Lunar Crater Plato.

Mr. Birt communicated a series of observations of this well-known crater, embracing a period of eighteen months, viz., from January 1860 to July 1861, which he had arranged according to the Moon's age, so that they not only served as a record of the past, but can also be used as an Ephemeris, indicating to the observer the appearances likely to be seen, and thus form the basis of an accurate course of observations on the physical aspects of *Plato*, and by means of which changes, if any, may be detected. There are several sketches of the spot and also portions of it. The observations are preceded by an index, referring to the Moon's age at which each observation was made, and followed by a summary of objects suitable for further telescopic observation in or near *Plato*. The whole are bound in a volume, which is deposited in the Library for reference and circulation.

On an Instrument for comparing Colours, proposed to be designated a Homochromascope. By W. R. Birt, Esq.

In the course of my observations on the physical characteristics of the Moon's surface, I found it necessary to devise some means for comparing with known standards of colour the tints of various portions, especially the dark-floored craters, the extensive grey plains, and the more luminous districts in immediate proximity with the rayed craters. After various trials, I found the instrument of which a somewhat rough model is now exhibited* the best adapted for the purpose. It is intended to consist of a moveable cradle, possessing a rack-work motion receiving one of a series of glass plates; on each plate a certain number of disks are painted with transparent colours, each colour being experimentally determined by means of an instrument similar in its construction and action to the colour top. The numerical value of every tint can thus be precisely ascertained. The cradle, with its plate of glass, is moved within a box having a circular aperture, top and bottom, exactly equal to the coloured disk; so that, while the strong light of a lamp enclosed in a lantern is thrown on a highly reflective surface attached to the box, the disk is viewed by the light thus reflected and transmitted through it. In this way, while the eye carefully contemplates the tints of the lunar disk, it is also able to compare them with the tints

---

* The model was exhibited at the Meeting.— Ed.